

**PREFACE/CLASS OUTLINE**  
**ACQUISITION AND LOGISTICS EXCELLENCE WEEK 2001**

**TOPIC:** Overview of Interoperability in Requirements Generation

**LENGTH/TYPE:** 1 Period - Lecture

**SCOPE:** Interoperability is the ability of systems, units or forces to exchange data, information, materiel, and services to enable them to operate effectively together. Interoperability spans across all pillars of Joint Vision 2020 and is receiving renewed emphasis to advocate and enforce jointness. This lecture introduces interoperability as it relates to the requirements generation process. It overviews the requirements generation system, introducing basic concepts and establishing a foundation for further individual study of regulations in preparation for work developing operational requirements for systems.

**OBJECTIVES:** At the completion of this block of instruction, the participant will be able to:

1. Recognize basic requirements generation terminology and concepts, including interoperability, KPP, threshold, objective, and IER.
2. Be familiar with the general attributes of well-written requirements.
3. Be familiar with a process for developing an interoperability KPP.

**MATERIALS:**  
Briefing Charts

## Introduction to Interoperability




Welcome to an overview of interoperability as it relates to the requirements generation system for DoD materiel requirements.

This brief lecture is targeted to DOD workers who are, or will become, involved in developing or approving materiel requirements; in designing, acquiring, or supporting materiel systems or even in using those systems. The intent is to make you more familiar with the basics of Interoperability and how the subject fits into the acquisition life cycle.

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## Agenda Topics

- **Interoperability: What is it and why should I care?**
- **How does it fit into the requirements and acquisition processes?**
- **How to develop the Interoperability KPP**

08/12/01Introduction to Interoperability2

For the next hour, we will introduce and illustrate some basic concepts relating to interoperability as it is considered in DOD's requirements generation system. This will get you quickly familiar with basic terminology and concepts, and allow you to conduct further reading and discussion.

Here is a list of the topics we will discuss.

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## What is Interoperability?

**“(1) The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to make use [of] the services...to operate effectively together.”**

**“(2) The condition achieved among communications-electronics systems...when information can be exchanged...between them.”**

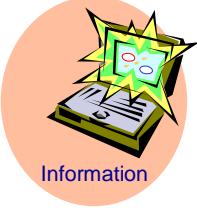
CJCSI 3170.01B



**Power**



**Ammunition**



**Information**

**It's a consideration in most materiel & military operations**

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Introduction to Interoperability

3

First, let's define what is meant when the requirements generation system refers to interoperability. Most of us have an instinctive feel for what interoperability means, but here is a written extract from the formal policy definition.

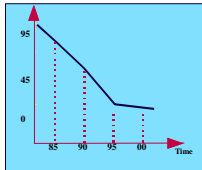
A few common examples of interoperability are shown in the various illustrations, but you can probably think of many others in our own Service or specialty area.

In some cases, unfortunately, we only think about or notice interoperability when it has not been achieved...when one Service organization deployed overseas with a Joint Task Force cannot use electricity available from a sister service, for example,...or when one organization cannot talk to another by radio because the radio frequency capabilities are mutually incompatible.


[NOTE TO PRESENTER: Either present yourself, or solicit ideas from the audience, of various other aspects of interoperability that are common in their own area. Use these personal examples as a transition to the next slide, like “ok, we’ve talked about some examples, now let’s discuss how important *is* ‘interoperability’?”]

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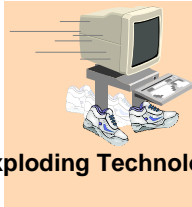
## Why is it important?




**Declining Resources**



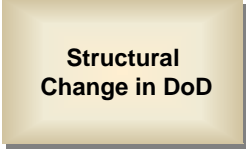
**Wide Spectrum of Operational Commitments**



**Exploding Technology**




**Increasing Uncertainty in Requirements**



**Structural Change in DoD**

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4

From some of the examples we just mentioned, it should be obvious that achieving interoperability is an important issue. And the fact is that interoperability is gaining in importance as time goes on. Why?

Declining resources has reduced the overall size of the military, and almost eliminated redundancy between the Services. This necessitates a sharing of support and services in most operations.

At the same time, operational missions have become broader in scope, as well as more varied, now typically requiring effective Joint interaction and, with increasing frequency, international. Experience gained during these commitments clearly illustrates the urgency of gaining true interoperability.


Finally, technology and the benefits it brings has made its use pervasive. Almost every aspect of military art has been, or soon will be, affected by technology. But by its nature, the benefits of technology are greater the wider that it is employed and is able to share data and services.

Increasing uncertainty of requirements driven by an ill defined threat forces us to build interoperable architectures where we could rely on specific information exchange protocols (NATOL agreements, MILSPECS).

The structural change in DoD will force US Forces to fight a combined, joint & service environment change in service roles and missions from QDRs require our systems to have unprecedented flexibility.

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## Need For Appropriate Interoperability

- ⇒ **Within Services**
- ⇒ **Within DoD**
- ⇒ **With Coalition Partners**
- ⇒ **With National and International Agencies**

### Thru Open Systems Architectures

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5

The factors just mentioned illustrate a need for interoperability starting within the services but reading beyond DoD and international borders.

Ultimately we achieve interoperability through the increased use of Open Systems architectures.

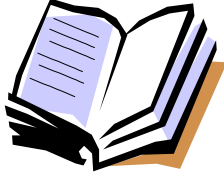
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## Key References

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**CJCSI 3170.01B (April, 2001) “Requirements Generation System”**


**CJCSI 6212.01B (May, 2000) “Interoperability and Supportability of National Security Systems and Information Technology Systems”**





**DOD Directive 5000.1 “The Defense Acquisition System”**

**DOD Instruction 5000.2 “Operation of the Defense Acquisition System”**

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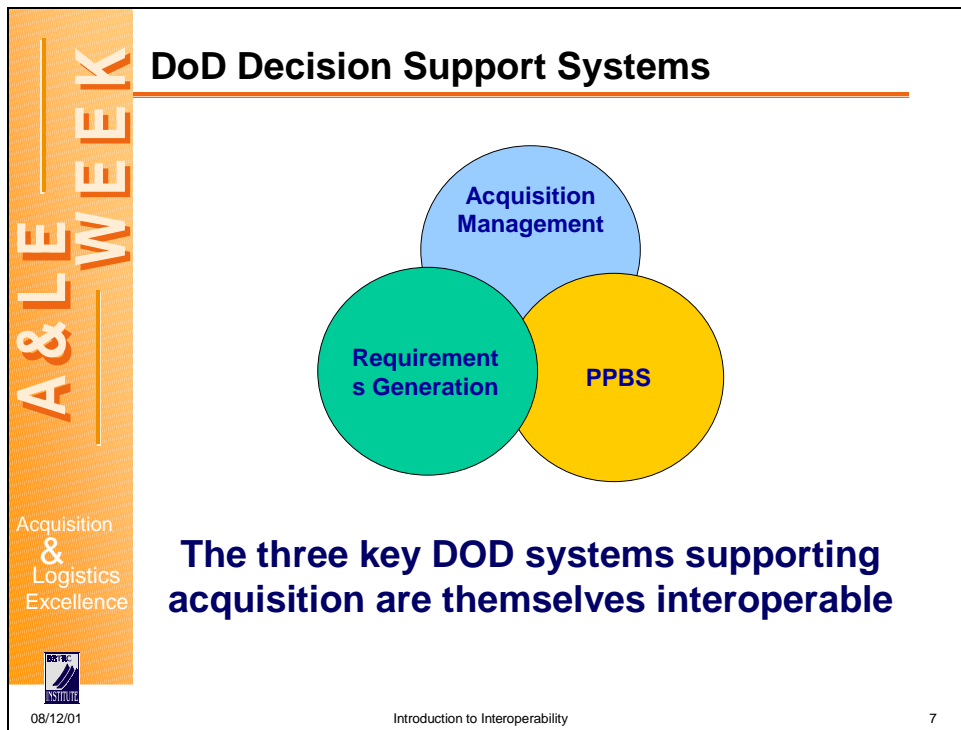
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We will not achieve interoperability unless it is considered to be important by those who develop requirements and fulfill them. An indicator of the importance given achieving it, interoperability is addressed in the key policy documents controlling requirements and acquisition of materiel systems.

As I stated earlier, this lecture is merely intended to overview and illustrate interoperability concepts based on the policy.

However, the lecture itself is not policy. For policy statements, read the references, which contain carefully crafted and approved language. For clarifications about a specific problem or question you may have related to applying policy, you must contact your Service or DOD policy specialist.

Let's begin with a brief discussion of the acquisition life cycle as it is described in these documents.



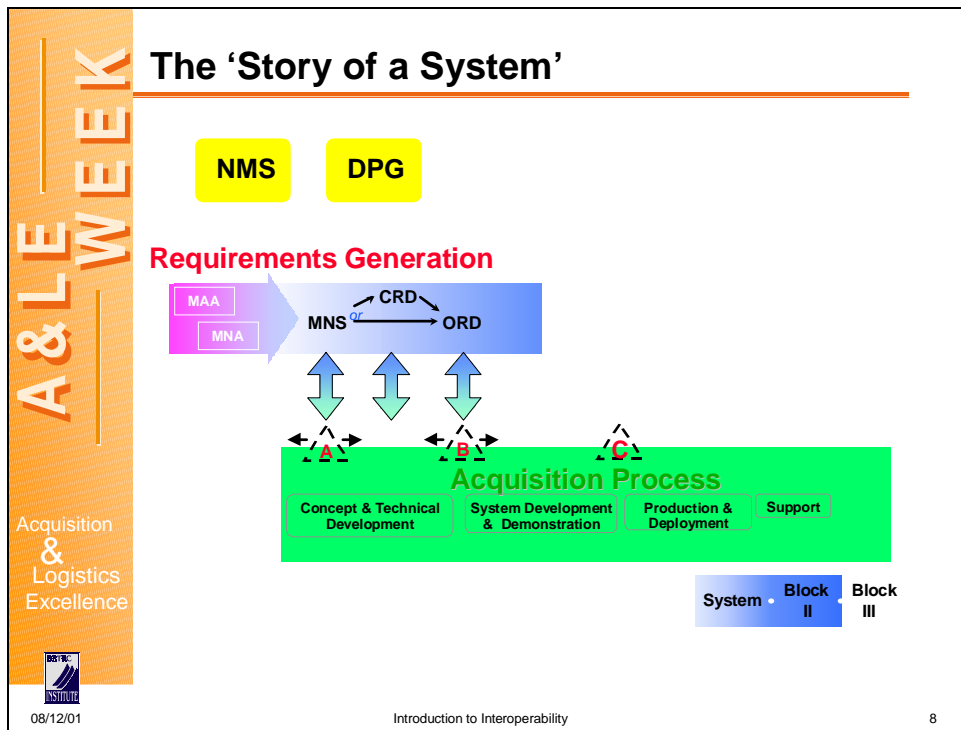
The Department of Defense's three principal decision support systems are shown here. As you might expect, the requirements generation system focuses on developing, writing, and prioritizing materiel needs. The acquisition management system develops and acquires materiel to meet those needs. And the Planning, Programming, and Budgeting System (PPBS) manages and allocates resources used by the department to meet all its requirements, materiel and non-materiel.

Information gathered and decisions made within any one of these management systems is based in large part upon, and directly influences, the remaining two. So it may be obvious that these three systems must themselves be interoperable to ensure that DOD acquires high quality products in time to meet its needs.

Information and services must be effectively exchanged and used across the boundaries of the three systems, or we will acquire materiel that does not meet mission needs, is too expensive to buy or operate in the quantities required, or is fielded too late to be of value.

We will focus in large part on the requirements generation system as we overview the subject of interoperability, though we will not treat it in a vacuum.





This slide illustrates the flow of a requirement from conception of a requirement to fielding and support of a system to meet it.

The process begins when a Mission Area Analysis (MAA) takes a very top-level look at some aspect of National Strategy and identifies operational tasks to support it.

Next, a Mission Needs Analysis (MNA) assesses the capability to accomplish the tasks identified in the MAA. It identifies mission needs required to accomplish the top-level tasks. These needs may be solvable by a non-materiel solution such as changing doctrine, organization, or training. Needs that can be solved by a non-materiel solution should be because they tend to be cheaper, faster solutions than going the materiel acquisition route.

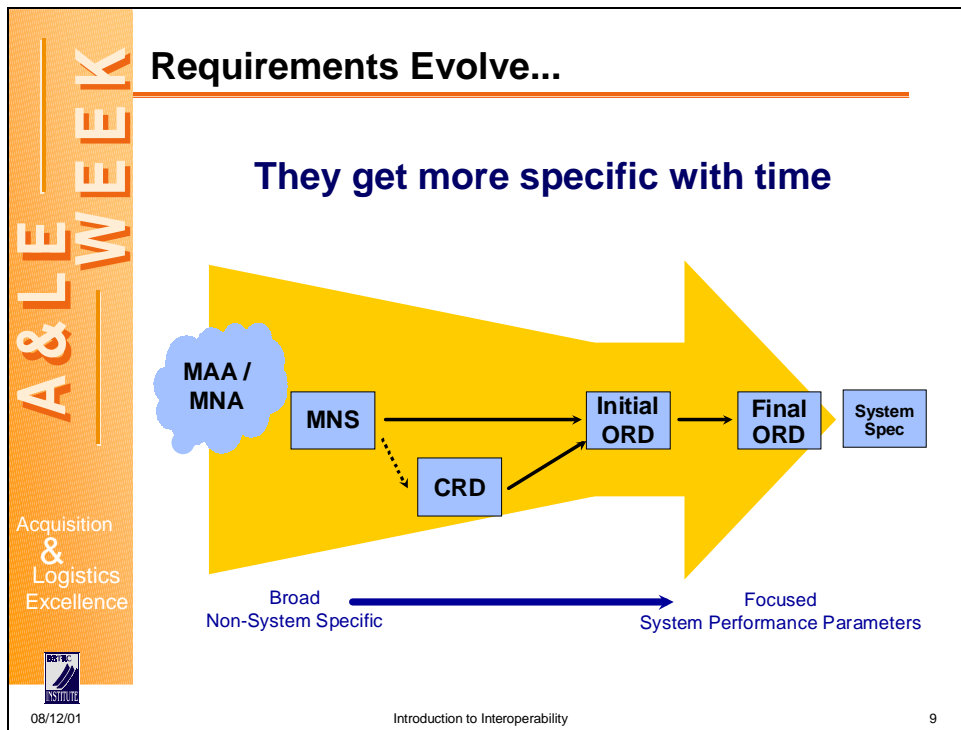
Development of a Mission Needs Statement (MNS) is an indication that it appears that a materiel solution may be needed, and interaction between the Requirements Generation system and the Acquisition System begins in earnest. Multi-disciplined teams should be used to develop all requirements from the MNS and beyond. This will help ensure that all key matters are considered and addressed up front, while it is easy and inexpensive to make changes; requirements changes after system development has begun is costly in time and money!

As the requirement is developed and refined, information is continually shared between the requirements generation system and the acquisition process. This proactive sharing of information permits sound decisions to be made concerning the requirement itself and the acquisition of a system to meet that requirement.

Depending on the state of technology (expressed as Technology Readiness Levels 1 thru 9. Appx 5000.2R) needed to fulfill the requirement, the acquisition process can be entered at any of three gateways, termed milestones, labeled here A, B, and C.

Each milestone requires certain specific prerequisites be accomplished, but in general, entry at MS A is for when requirements are still fluid or for systems requiring significant technology development; entry at B is for systems where the requirement is finalized and components and most of the technology generally exists, but the system may require significant integration efforts; and MS C is where a system solution is sufficiently mature that a production phase may be entered without further development.

One further aspect of the system is illustrated on this slide, and that is the fielding and maintaining of a basic system, followed by block upgrades. This is important because many times it is helpful to time-phase requirements to permit an evolutionary acquisition of a capability. This permits the rapid acquisition of a basic system to meet an immediate requirement with enhancements to meet later ones.



The basic concept shown here applies whether we are discussing the flow of requirements documents from MAA on through to a system specification, or whether we are discussing some of the particular documents themselves.

The MAA and MNA are very broad looks at requirements, and as we mentioned previously, they do not necessarily become requirements for a materiel system. The MNS is a broad materiel requirement, but does not specify the type of system or solution to be acquired. For example, a MNS may express a requirement to protect military personnel from a certain biological agent, perhaps ninja fever. There may be many ways to accomplish this, ranging from various types of vaccines to protective garments to post-exposure treatments. The MNS will not limit the options.

A CRD may then look at a family of system solutions to the need expressed in the MNS, and might include several of the solutions mentioned. The initial ORD discusses requirements for one specific solution, perhaps an injectable vaccine. Even the ORD evolves as information is gathered and shared between the acquisition and requirements communities. At some point, the ORD is finalized. The DOD 5000-series specifies that the ORD be final prior to the MS B decision point; requirement changes beyond MS B must be very rare.

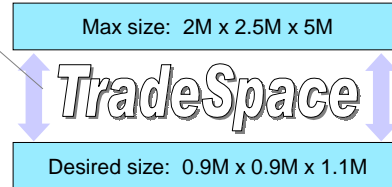
## Anatomy of a Requirement

**“The x-ray device shall be transportable in a standard ISO container. The objective x-ray device shall be transportable in a HMMWV.”**

**Threshold:** The minimum acceptable parameter value for a given requirement

**Tradespace:** Value between the Threshold and Objective for any given requirement

**Objective:** The parameter value desired by the user to meet the requirement



Some other key points about developing requirements are shown here:

Requirements are typically expressed in terms of ‘Thresholds’ and ‘Objectives.’

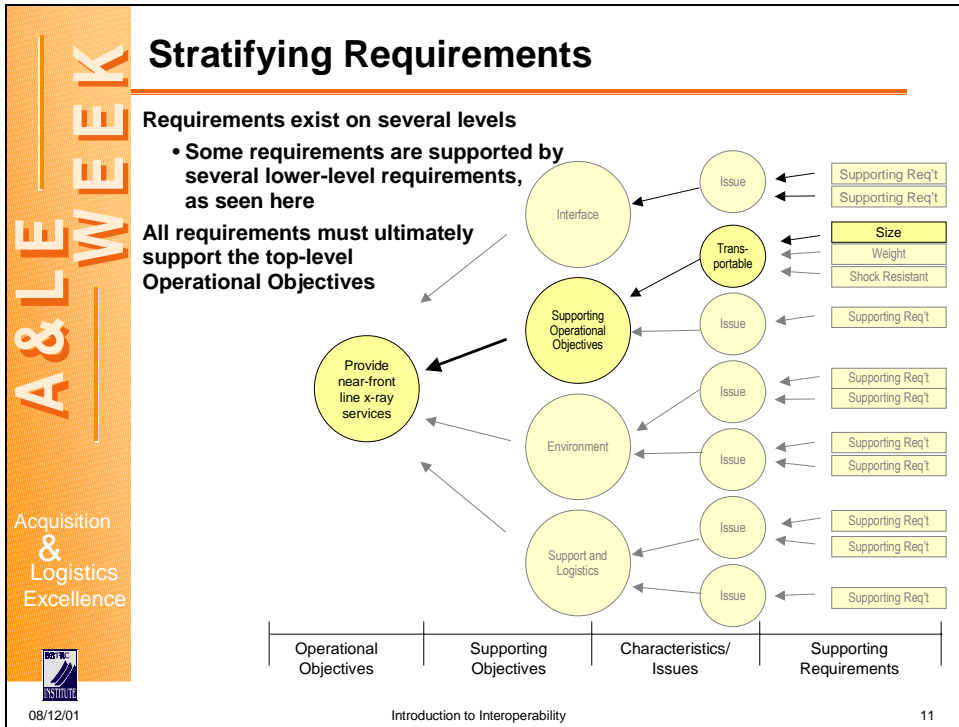
To illustrate basic terminology, here is an example of a performance-based requirement taken from an actual draft ORD.

The user really would like to have an x-ray machine that fits inside a HMMWV, but is willing to accept one that will fit into a standard ISO container. So in this case, the smaller size is the objective requirement and the larger but still acceptable size, is the threshold.

Between these two values is Tradespace, intended to give acquisition management professionals the flexibility to make timely decisions as required without continually asking for permission.

The Program Manager will try to reach the objective, but where this proves difficult because of cost, schedule, or other issues--perhaps the state of the technology--then tradeoffs will be made down to the threshold. Sometimes they will pursue an evolutionary method, such as single step blocks or spiral development. Evolutionary Requirements – provide military utility as quick as possible with the explicit intent of providing increased capability over time.

Many requirements are expressed using both thresholds and objectives. In cases where only a single value is articulated, the acquisition community will consider it to be both threshold and objective.



Some requirements are very specific and low-level in nature. Others are more broad, high-level objectives.

In the last slide we talked about 'size' of an x-ray machine. This is an example of a low-level requirement. Weight of the machine might be another. Both of these low-level requirements, when combined with others, may all contribute to a higher-level requirement or characteristic we could term as 'transportability.'

In most cases, we see that the various lower-level requirements build upon each other to support the higher-level issues and objectives.

All requirements, at whatever level, should ultimately support or contribute to the operational objectives for the system. If they do not, then they should be closely scrutinized to ensure that their inclusion in the requirement is actually needed.

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## Key Performance Parameters


Some capabilities or characteristics are so important...

Failure to achieve their threshold is **not acceptable!**

**Designate these as KPP:**

- Limited in number
- Minimize thresholds
- Include in Acquisition Program Baseline
  - Performance
  - Schedule
  - Cost



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12

Some requirements are so essential to the new system's successful mission accomplishment that failure to achieve the threshold for them calls for a reevaluation of the entire system acquisition.

In other words, any requirement that the user is willing to cancel the program for failing to achieve its required threshold value should be considered a 'Key Performance Parameter,' or KPP.

KPPs should be as few as possible in number. The more requirements that are designated KPP, the less likely the system is to be fielded on-time and within budget, and delayed or over-budget programs are themselves targets for cancellation. For the same reason, users should ensure that the thresholds stated for KPPs are, in fact, the minimal performance acceptable. The risk is fielding no capability at all, rather than receiving a '90% solution.'

KPPs are validated by the Joint Requirements Oversight Council (JROC). ORD KPPs are included in the program's Acquisition Program Baseline and the Test and Evaluation Master Plan.

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## Characteristics of Good KPPs

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**Output oriented / performance-based**  
 Describes 'what' and 'how well,' but not 'how to'


**Described in Threshold - Objective format**  
 Lists minimum acceptable as well as desired performance

**Measurable**  
 Defined in terms that can serve as a means of measuring success or comparing alternatives



Examine KPPs closely

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Most good KPPs have some characteristics in common.

They are performance-based, that is they tell 'what' must be accomplished, and 'how well' but do not specify the process or method to accomplish the end. This gives maximum flexibility for innovation; remember, the outcome is what is important.

They are written in terms of acceptable thresholds and desired goals.

They are measurable, and in the case of ORD KPPs, they are testable. This means the KPP should clearly define what is successful achievement.

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## Characteristics of Good KPPs

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**Unambiguous**  
Clearly written in plain English, leaving no room for doubt or misinterpretation


**Justifiable through objective analysis**  
Numeric parameters can be objectively explained and supported to disinterested seniors

**Achievable**  
Thresholds should be within the bounds of technical feasibility within the time required



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14

A few more common characteristics of KPPs:

They should be clearly written so that there is no room for interpreting what is required. Again, tell 'what' not 'how.'


Objective analysis justifies the KPP and the threshold and objective values; they are not simply 'pulled out of a hat.'

Finally, KPPs should be achievable within the time specified for achieving the requirement. If they are not, then by definition the system must be reexamined and potentially cancelled. To specify an unachievable KPP is to ultimately waste resources.



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## One Mandatory KPP

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Interoperability is a mandatory KPP in both CRDs and ORDs

In this context, interoperability relates solely to information exchange

Expressed in terms of Information Exchange Requirements or “IERs”



Introduction to Interoperability15

There is one topic that has been designated as a mandatory KPP in both CRDs and ORDs, and that is interoperability.

A few minutes ago we said that under the official definition of interoperability there are many aspects of interoperability. But in the case of this “mandatory KPP” designation, interoperability relates solely to the second part of the definition, which relates to information exchange. This is a recognition of the importance that information exchange, or lack of it, holds in today’s complex environment.

Expressing the Interoperability KPP is typically done in terms of “Information Exchange Requirements” or IERs.

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## The Interoperability KPP

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KPP	Threshold	Objective
All top-level IERs will be satisfied to the standards specified in the Threshold (T) and Objective (O) values.	100% of <b><i>critical</i></b> IERs will be satisfied	100% of IERs will be satisfied

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16

Here is an example of what the Interoperability KPP might look like.

The KPP itself is the statement at the left. The threshold value is typically that the system must meet all ***critical*** IERs. The objective is that all IERs, critical and non-critical, be met.

So what is an IER, you ask?

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## IERs

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### are Information Exchange Requirements


In a CRD: IERs are top-level information exchanges between both systems *of* the family and those *external* to the family of systems

In an ORD: IERs are top-level information exchanges that are *external* to the system


An information exchange so significant that, if it does *not* occur, the mission area will be adversely impacted is called a 'Critical IER'

?

Who to talk to?



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17

IERs characterize the information exchanges to be performed by the proposed family or system. ...what data must be passed, and to whom or what.

Depending on whether the IER is in a Capstone Requirements Document or an Operational Requirements Document, the exact definition is slightly different.

The point is that IERs do not define internal information interfaces. Those are articulated as part of the systems engineering process.

Top-level IERs are derived from a high-level operational concept graphic and a system interface description that illustrate the proposed system's information exchange requirements for mission accomplishment.

Top-level IERs do not impose any specific material solution. They are designed to identify the basic characteristics of the information that needs to be exchanged. IERs are typically described in a matrix format.

Like all good requirements, Interoperability KPPs, and the IERs that they are derived from, will be measurable and in the case of IERs in ORDs, testable.

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## Format for CRD IERs

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### Top-level IERs to be provided in matrix format

### Mandatory Fields for CRDs

1 Rationale/UJTL Number	2 Event/Action	3 Information Characterization	4 Sending Node	5 Receiving Node	6 Critical
Set of joint mission tasks from the UJTL (CJCM 3500.04B) for each mission area identified in the CRD/ORD.	<b>Free Text:</b> Event or action that triggers the need for the information exchange.	<b>Pick List and Free Text:</b> The critical information characteristics that describe what information is being exchanged and how it is to be used	<b>Free Text:</b> Sending Node	<b>Free Text:</b> Receiving Node	<b>Logical Field:</b> Yes/No  The criticality assessment of the information being exchanged in relationship to the mission being performed.

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18

A top-level IER matrix will be provided in a worksheet format (i.e., Excel, LOTUS, or Quattro Pro) as part of CRDs and ORDs when submitted.


Top-level IERs identify who exchanges what information with whom, why the information is necessary, and how the information exchange must occur.

Top-level IERs identify warfighter information used in support of a particular mission-related task and exchanged between at least two operational systems supporting a joint or combined mission.

As we said earlier, requirements get more specific with time. As a result, there is more detail in an ORD top-level IER matrix than in a CRD top-level IER matrix. If the ORD is using a time-phased, evolutionary or block requirements approach, the ORD must identify the IERs for each phase or block. The ORD will include all applicable top-level IERs identified in the CRD (if a CRD exists).

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## Developing IERs

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### Determine the intended use of the systems

- Operational Concept

### Operational View (High level operational concept graphic OV-1)

- Drive by doctrine
- Generally independent of organization & force structure

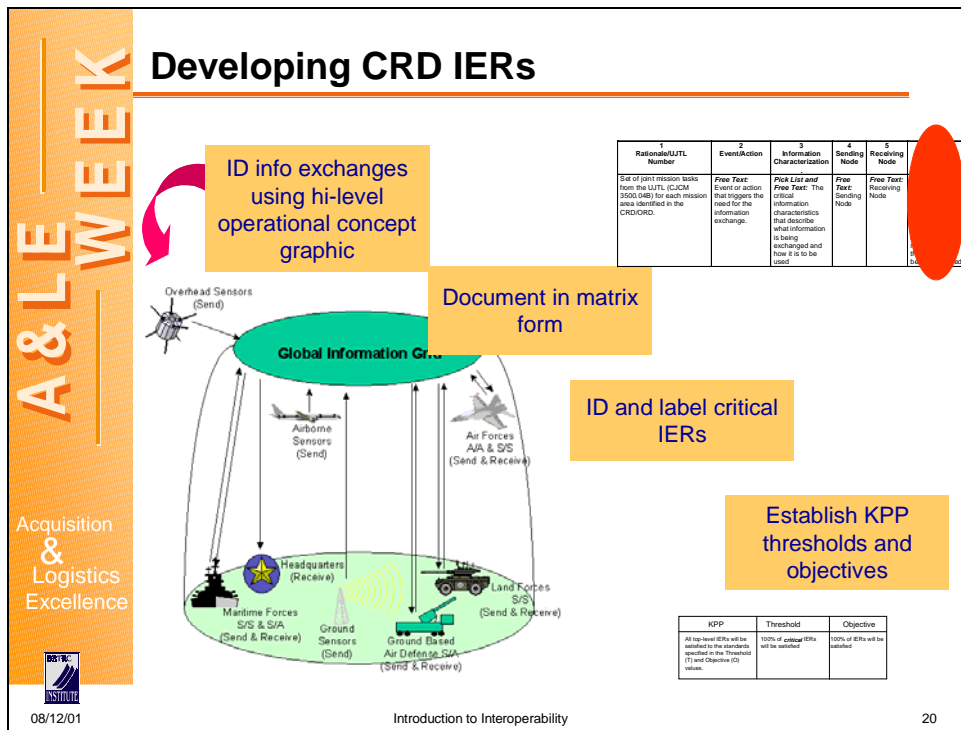
***"a description of the tasks and activities, operational elements and information flows required to support a military operation"***  
**- US CHISR Arch. Framework v.2**

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19

The first step in developing any IERs is to understand the intended use of the system. The operational concept of the CRD or ORD and a dialogue with the NAR fighter are good starts.

Once you understand the intended use you can sketch an operational view. The eventually becomes part of the ORD as well (OV-1). The view describes teaches from the uniform Joint Task List to be performed and information flows to support those tasks.



Let's step through one way to develop IERs.

1. Identify top-level joint and combined information exchanges that are between systems that make up the family of systems, and external exchanges, using a high-level operational concept graphic as an aid.
2. Document the top-level joint and combined IERs in the required information exchange matrix form. We'll look at the format in a second.
3. Identify and label *critical* IERs. Remember, a critical top-level IER is an information exchange that is so significant that if it does not occur the CRD mission area will be adversely impacted. IERs that must be flowed down to specific systems (ORDs) should also be clearly specified in the CRD.
4. Derive an interoperability KPP like the one we saw earlier, from the top-level IER matrix. Don't forget the tenets of good KPPs we discussed earlier!



## Format for ORD IERs

### Top-level IERs to be provided in matrix format

#### Mandatory Fields for ORDs

1 Rationale / UJTL Number	2 Event/ Action	3 Information Characterization	4 Sending Node	5 Receiving Node	6 Critical	7 Format	8 Timeliness	9 Class	10 Optional
Set of joint mission tasks from the UJTL (CJCM 3500.04B) for each mission area identified in the CRD/ORD.	<i>Free Text:</i> Event or action that triggers the need for the information exchange.	<i>Pick List and Free Text:</i> The critical information characteristics that describe what information is being exchanged and how it is to be used	<i>Free Text:</i> Sending Node	<i>Free Text:</i> Receiving Node	<i>Logical Field:</i> Yes/No Assessment of the criticality of the information being exchanged in relationship to mission being performed	<i>List and Free Text:</i> Description of data type.	<i>Numerical Field:</i> Required maximum time from node to node expressed in seconds.	<i>Pick List Field:</i> Classification of the information.	<i>Free Text:</i> As desired by the originator

The format for an IER matrix for an ORD includes all of the same information in the CRD matrix, but adds several new columns of information, too. This is because, as we have discussed very early in our briefing, requirements get more specific as we progress through the process.

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## Developing ORD IERs

ID info exchanges using hi-level operational concept graphic

ID legacy and future external interfaces

Document top-level external IERs in matrix format

ID and label critical IERs

Derive interoperability KPP from the IER matrix

1 Rationale/UTL Number	2 Event/Action	3 Information Characterization	4 Sending Node	5 Receiving Node	6 Critical
Set of joint mission tasks from the UTL (LCM 350.048) for each mission area identified in the CRD/ORD.	Free Text: Event or action that triggers the need for the information exchange.	Free Text: The critical information characteristics that describe what information is being exchanged and how it is to be used.	Free Text: Sending Node	Free Text: Receiving Node	Logical Field: Yes/No <i>The critically assessed of the information being exchanged in relationship to the mission being performed.</i>

KPP	Threshold	Objective
All top-level IERs will be satisfied to the standards specified in the Threshold and Objective (O).	100% of external IERs will be satisfied	100% of IERs will be satisfied

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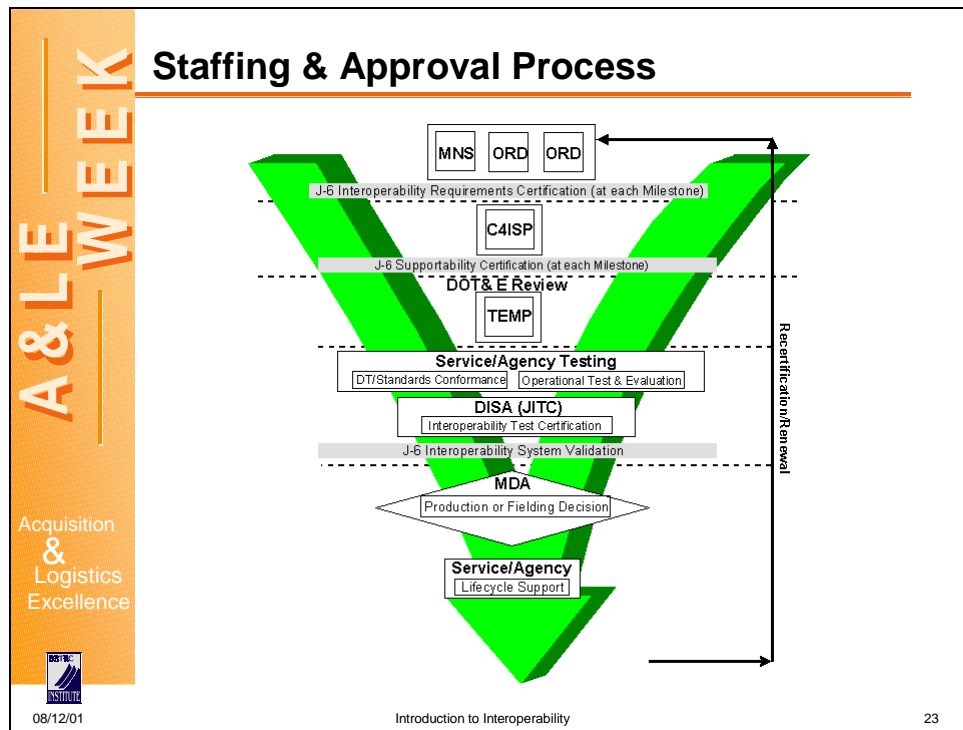
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The process for developing ORD IERs is similar to that for CRDs.

1. Identify top-level joint and combined external interfaces using a high-level operational concept graphic.
  2. Identify legacy, current, and future external joint and combined subsystems and interfaces required to exchange information using a system interface description.
  3. Document top-level joint and combined external IERs using the matrix format.
  4. Identify and label critical top-level IERs. An ORD critical top-level IER is required to support its associated CRD critical top-level IER, or will severely and adversely impact on a warfighter mission if not accomplished. If the ORD is using a time-phased, evolutionary or block requirements approach, the ORD must identify the IERs for each phase or block.
  5. Derive interoperability KPP from the top-level IER matrix.
1. Other points: a case may exist when an ORD does not have a set of top-level IERs. An ORD interoperability KPP that defines the level of interoperability for the proposed system may still be required.

ORDs under the umbrella of a CRD must ensure compliance with the CRD interoperability KPP.





This graphic illustrates the process for getting Interoperability Requirements Certified, which must be done prior to each acquisition milestone decision.

The J-6 certifies MNSs, CRDs, and ORDs, regardless of ACAT level, for conformance with joint policy, doctrine, and interoperability standards. They also certify the interoperability KPP derived from a set of top-level IERs.

CINCs review and comment on ACAT I/IA and Joint Requirements Oversight Council (JROC) special interest requirements documents during the J-8 JROC formal review. CINCs get to review and comment on ACAT II and below documents during the J-6 interoperability certification process.

USJFCOM reviews interoperability KPPs and IER matrices for all CRDs and ORDs regardless of ACAT.

The J-6 forwards interoperability requirements certification to the JROC or the sponsoring component. Unresolved interoperability issues go to the Military Communications-Electronics Board (MCEB) or Military Intelligence Board (MIB) for resolution.

**J-6 Supportability Certification.** The J-6 certifies to ASD(C3I) that C4ISPs, regardless of ACAT, adequately address infrastructure requirements, the availability of bandwidth and spectrum support, funding, personnel, and identify dependencies and interface requirements between systems. CINCs get to comment on documents, regardless of ACAT, during the process.

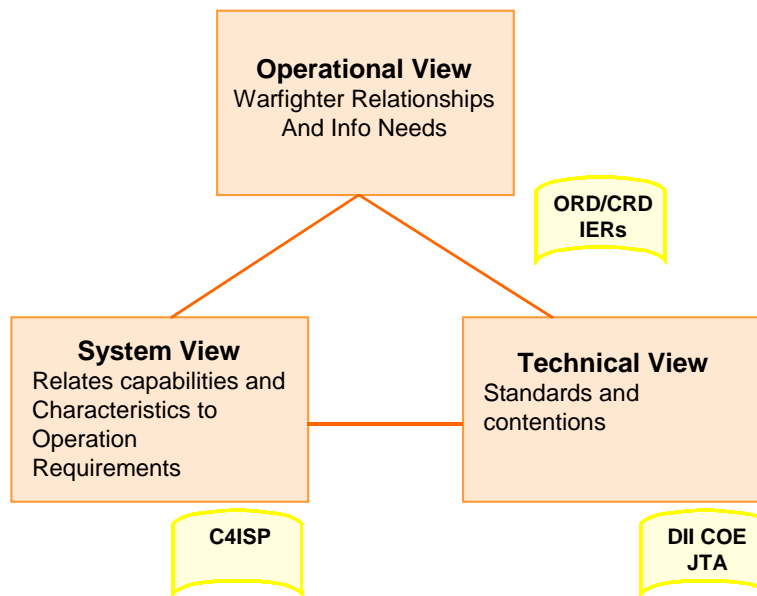
J-6 Interoperability System Validation. The J-6 validation is intended to provide total life-cycle oversight of warfighter interoperability requirements. The J-6 validates that the interoperability KPP derived from the set of top-level IERs approved in the requirement was adequately tested and testing results certified.

Interoperability evaluation and testing will be conducted throughout the life cycle. Interoperability testing and test certification must be addressed as an integral part of the requirements generation process before production and fielding approval by the milestone decision authority at all ACAT levels.

Hardware and software modifications that affect interoperability of fielded systems will require DISA (JITC) re-certification before the modifications are fielded for initial operational capability (IOC).



## Views





## Points of Contact

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➤ **Joint Forces Command**

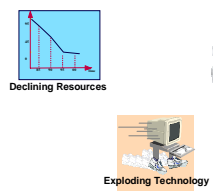
➤ **Joint Staff**

➤ **Services**

A&L WEEK

## Wrap Up: Key Points

### Why is interoperability important?

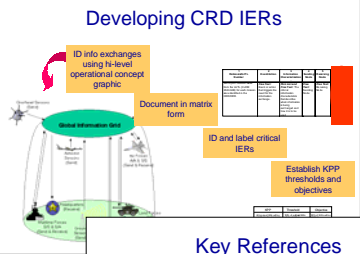


Declining Resources

Exploding Technology

Expand operational commitment

### Developing CRD IERs



### Key References

- CJCSI 3170.01B (April, 2001) "Requirements Generation System"
- CJCSI 6212.01B (May, 2000) "Interoperability and Supportability of National Security Systems and Information Technology Systems"
- DOD Directive 5000.1 "The Defense Acquisition System"
- DOD Instruction 5000.2 "Operation of the Defense Acquisition System"

- ✓ **DoD's and the world's situation makes interoperability critical**
- ✓ **There is a process to develop IERs and KPPs, and it must start early**
- ✓ **There are key references and offices to go for help**

08/12/01
Introduction to Interoperability
26

In the past hour we've talked about many things. This topic could easily have filled a day!

But the key points I think you should take from this lecture are pictured here.

We must be concerned about interoperability: we do not have the resources to meet all of our commitments if we are not. Increasingly, operations will be joint and multi-national.

Interoperability is a mandatory KPP in all ORDs and CRDs. We talked about two processes to help a multi-functional team brainstorm and refine those information exchange requirements that become the basis for the KPP.

Finally, this brief overview will not make you an expert on interoperability. You must review the references, and work with your agency and Joint staffs to get the job done well.